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MINERALS PROGRAM  
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APR 29 1991

DIVISION OF  
OIL GAS & MINING

FILE M/049/009

ZUMA PROJECT

(E/049/021)

Sunshine Mining Company is currently shipping alumina clay, from the Zuma pit to Ash Grove Cement West's Inc. cement plant located near Leamington, Utah. All shipments to date have been from existing mine waste rock dumps located adjacent to the old pre 1975 pit. Ash Grove has notified Sunshine the alumina clay in this pit is acceptable to use for processing cement and have indicated they would like to purchase 40,000 to 60,000 tons of this material on an annual basis. To date, Sunshine Mining Company has been operating this pit on a "Permit To Conduct Exploration" so Ash Grove could bulk sample and test this clay during actual production at their plant. Sunshine has determined a viable market now exists and would like to revise our current mine operating plan to include this new area. During personal phone calls to D.O.G.M. it was suggested that Sunshine incorporate this new project into our previously permitted areas by using a "Notice Of Intention To Revise Mining Operations." Sunshine Mining Company would like to permit the clay operations by revising our current existing permits to include this area. The following will address the information required by your division.

NOTICE OF INTENTION TO REVISE MINING OPERATIONS:

Name of Operator/Applicant:	Sunshine Mining Company
Name of Company/Corporation:	Sunshine Mining Company
Address:	P.O. Box 250 Eureka, Utah 84628 801-433-6854
Phone:	
Name of Mine/Project	
Previously Assigned:	Eureka Operations
File Number:	ACT/049/009
Location of Proposed:	Utah County
Project:	SE 1/4 of NW 1/4 Section 21
Township:	T10S, R2W, S.L.B. & M.

Ownership of Land Surface:

All land involved in the proposed development of the alumina material is on private - fee simple land. Right of entry is granted through a mining lease and agreement with owner of patented mining claims.

Maps, Drawings and Photographs:

The following maps have been previously submitted to your division.

- 1) Topo map - Eureka quadrangle scale 1:24,000

- 2) Blue print showing property lines in relationship to areas proposed to be utilized for mining alumina clay. scale: 1 inch = 2000 feet
- 3) Topo map showing
  - a. existing permit areas
  - b. proposed areas to be developed
  - c. existing roads - access
  - d. surface drainage
 scale: 1 inch = 400 feet
- 4) Photographs of Zuma clay area

Sunshine Mining Company proposed to sell a high alumina clay to Ash Grove Cement West's Leamington, Utah plant. The clay will be shipped from an existing pit previously mined by U.S. Energy in early to mid 1970's. At the cessation of U.S. Energies activities in the Zuma pit large waste rock dumps were left along the pit walls and the pit bottom that contain clays with alumina that is suitable for Ash Grove's cement processing plant. All production, to date, has come from the removal of existing mine dumps, but future production will commence in the pit as the dumps are depleted. All dump or mined clays will be loaded directly on trucks and shipped to the site of the cement plant. No onsite crushing, upgrading or processing will be required.

#### Chemical Analysis of Alumina Clays:

A short hole drilling program was conducted on the old existing pit waste rock dumps and pit to determine the quality of the material to be shipped to Ash Grove. A airtrack drill with a portable compressor was used to complete the holes, with all drill holes not exceeding 36 feet in depth. The following analysis for the holes are reported as follows:

Hole No.	Interval	SiO <sub>2</sub> %	Al <sub>2</sub> O <sub>3</sub> %	Fe <sub>2</sub> O <sub>3</sub> %	CaO %	MgO %	SO <sub>3</sub> %	Na <sub>2</sub> O %	K <sub>2</sub> O %
117	0'-12'	28.38	24.47	28.41	1.72	0.14	0.05	0.13	0.21
117	12'-24'	35.43	31.85	15.56	0.51	0.01	0.00	0.14	0.06
117	24'-36'	36.11	32.23	15.30	0.35	0.05	0.00	0.12	0.03
118	12'-24'	36.17	32.95	13.10	0.34	0.03	0.03	0.07	0.05
118	24'-36'	35.27	30.25	19.27	0.17	0.00	0.06	0.09	0.13
119	12'-24'	27.25	23.05	33.50	0.40	0.02	0.08	0.08	0.05
119	24'-36'	21.45	6.80	6.28	20.21	13.69	0.04	0.06	0.27
102	0'-12'	42.80	25.83	11.91	0.57	0.85	1.25	0.03	1.97
102	12'-24'	43.52	24.45	11.26	1.21	1.38	1.01	0.02	1.91
115	0'-12'	8.86	2.23	0.90	39.21	14.07	0.12	0.16	0.09
115	12'-24'	6.70	1.91	4.70	41.58	10.42	0.08	0.13	0.05
307	12'-24'	19.54	6.56	3.01	40.42	1.00	0.07	0.07	0.63



Existing Permit Areas:

Sunshine Mining Company currently has the following areas bonded with your division in the East Tintic Mining District.

Bond Area	Acreage	Disturbed Acres	Reclaimed Acres	Costs
Apex	2.8	2.1	0.1	\$ 67,750.00
Trixie	11.4	8.55	4.75	37,320.00
* Hunter Shaft	10.0	7.17	7.17	48,100.00
Burgin Mill	57.9	29.40	29.40	129,600.00
* Tailings Pond	41.37	28.67	28.67	39,310.00
Settling Ponds	180.00	36.10	26.00	30,750.00
TOTALS:	303.47	111.99	96.09	\$352,650.00

\* These two areas have not had surface development.

In January 1986 Sunshine Mining Company submitted a tailings pond modification plan ACT/049/009. Total estimated disturbed acres for these ponds were 10.01 acres and total reclamation costs were estimated at \$17,450.00. No surface work to complete these ponds has been started to date nor is any considered at this time. Active permit areas to date include:

Permit Area	Reclamations Costs (est.)
Trixie	\$ 37,320
Apex No. 2	67,572
Burgin Mill	129,600
Settling Ponds	30,750
TOTAL:	\$265,242

No additional work on any of the other permitted areas has commenced or been started to date. Sunshine currently has a \$737,000 surety bond to cover all reclamation costs and is not utilizing actively utilizing two (2) of the permitted areas.

We are requesting the bond amount assigned to the proposed Hunter Shaft site be reassigned to the Zuma pit area. The Hunter shaft will not be constructed per Sunshine's current feasibility study for the "New Burgin Mine." Current plans call for utilizing the existing Burgin No. 2 shaft to provide access to the orebody and the Hunter shaft and associated site complex will not be constructed so the bond for this area will not be required. The reclamation bond assigned to the proposed Hunter shaft is for \$48,100.

### Mining:

The alumina clay will be produced from the existing Zuma pit which has had previous halloysite clay production during the early 1970's. The clay pit covers approximately seven (7) acres and planned mining should be within the existing pit boundaries. Part of the planned production will be from the existing waste rock dumps located along and near the west edge of the pit. The rest of the production will be excavated from existing pit walls, on the north side of the pit, and in the bottom of the pit. Rock to be broken by either drilling and blasting or utilizing a cat with ripper to break the alumina clays for shipment.

Mined material will be loaded and shipped directly to Ash Grove's plant site for crushing and processing. No on site preparation will be required at the pit before shipments are made.

### Acres To Be Disturbed:

As previously stated, 40,000 to 60,000 tons of alumina clays are expected to be produced on an annual basis from this site. Operating under a exploration permit one additional access road was constructed to the pit to more readily access this area. This road was developed under a "Permit to Conduct Exploration."

The existing pit and disturbed areas cover approximately 6-7 acres. Future mining will be centered within the confines of this previously disturbed zone. With an estimated production rate of 60,000 tons/year, a bench 25 feet high would be moved back and cover 0.77 acres during each year. All projected mining during a projected 10 year program would come from either the existing pit or mine dumps.

### Revegetation:

Previous operators in the area did not save top soil or soil horizons. Work in the area to date, has not uncovered or defined any soils that could be saved for revegetation.

The proposed seed mix for ground cover at the site is:

Species	Pounds Live/Acre
Western wheatgrass ( <i>Agropyron smithi</i> (Rosana)	3.0
Indian ricegrass ( <i>Oryzopsis hymenoides</i> )	2.0
Sand dropseed ( <i>Sporobolus cryptandurs</i> )	1.0
Yellow sweetclover ( <i>Melilotus officinalis</i> )	2.0

Sunshine Mining Company will use a alfalfa hay mulch to cover the inactive slopes on slopes of haul roads and areas on haul pads that become inactive and any soils which may be stockpiled. The mulch will consist of alfalfa hay used at a rate of approximately 1 ton/acre to cover seeded areas. Ammonium nitrate fertilizer will be applied at a rate of 80/100 lbs. per acre on all reseeded areas. The mulch seed mixture and fertilizer will then be disked to a depth of 2"-3" to prevent wind erosion, where slope angles will not present necessary risk to equipment operators.

No vegetation transect has been taken across either of these dumps but I have attached a copy of the transects across our proposed tailings ponds which have similar ground cover, Exhibit A.

Estimated Reclamation Costs for Zuma Pit:

heavy equipment 4 days @ \$90.00/hr	\$ 2,880.00
3 man clean-up crew 1 day @ \$25.00/hr.	600.00
reveg. eng. 2 days @ \$35.00/hr.	560.00
revegetation of 7 acres @ \$1,000.00/acre	7,000.00
	\$11,400.00

Groundwater:

Two preexisting shafts are closely located near the two mine dumps. The Iron King No. 1 shaft bottom elevation was 4737 feet with a total depth of 1545 feet. No aquifer or aquifers were intersected in this shaft. The Zuma shaft had a total depth of 1210 feet and bottomed at a elevation of 4918 feet and no aquifers were intersected in this shaft. The water table in this area is projected to an elevation of 4558 feet from other shafts located in the surrounding area. No springs or wells are located in the area of the mine dumps and this proposed work should not impact on any ground water.

Soils:

The alumina clay material is located on soils identified as PK, Soil Survey of Fairfield - Nephi Area, Utah.

Drainage:

The clay is located topographically up-slope from any major or minor drainage systems. For test lot shipments Sunshine Mining Company maintains future erosional problems in the area of the mine dumps will be minimal. Therefore, Sunshine does not feel a diversion ditch around the existing old mine dumps that will handle the 10 year, 24 hr. storm should be required.

3. Vegetation Transects

100' Line Intercepts with 1000 intervals

Tailings Pond

Item	Intervals			% of Total		
	A-1	A-2	A-3	A-1	A-2	A-3
Transects						
Bare	379	405	214	37.9	40.5	21.4
Litter	421	321	414	42.1	32.1	41.4
Rock	1	10	0	0.1	1.0	0.0
<i>Hilaria jamesii</i>	53	0	6	5.3	0.0	0.6
<i>Oryzopsis hymenoides</i>	0	12	0	0.0	1.2	0.0
<i>Bromus tectorum</i>	74	105	294	7.4	10.5	29.4
<i>Chrysothamnus</i>						
<i>viscidiflorus</i> st.	85	17	51	8.5	1.7	5.1
<i>Lepidium perfoliatum</i>	1	30	36	0.1	3.0	3.6
Total Understory	213	166	387	21.3	16.6	38.7
less <i>Bromus tectorum</i>	139	61	93	13.9	6.1	9.3
<i>Artemisia tridentata</i>	405	337	78	40.5	33.7	7.8
<i>Chrysothamnus</i>						
<i>viscidiflorus</i>	0	0	85	0.0	0.0	8.5
Total Overstory	405	337	163	40.5	33.7	16.3
Total Understory Average	25.5%					
less <i>Bromus tectorum</i>	9.8%					
Total Overstory Average	30.2%					
Total Cover Average	55.7%					